

What is claimed is:

1 1. A method of operation within a data processing system, the method comprising:
2 receiving a request to execute a first function;
3 executing a second function if the first function is defined to return data in a first
4 type of data structure, the second function, when executed, returning
5 formatting information that indicates an arrangement of fields of data within
6 the first type of data structure;
7 executing the first function to obtain a collection of data formatted according to the
8 first type of data structure; and
9 organizing the collection of data according to the formatting information returned
10 by the second function.

1 2. The method of claim 1 wherein receiving a request to execute a first function
2 comprises receiving a request that indicates a data source to be accessed by the first
3 function.

1 3. The method of claim 2 wherein receiving a request that indicates a data source
2 comprises receiving a uniform resource locator (URL) that indicates the data
3 source.

1 4. The method of claim 1 wherein executing the second function if the first function is
2 defined to return data in a first type of data structure comprises executing the
3 second function if a predetermined keyword is specified as a data return type for the
4 first function.

1 5. The method of claim 1 wherein executing the second function if the first function is

2 defined to return data in a first type of data structure comprises executing the
3 second function if the first function is defined to return data in an array of data
4 elements.

1 6. The method of claim 5 wherein the data elements in the array correspond to rows of
2 a database table, respectively.

1 7. The method of claim 6 wherein the formatting information indicates an
2 arrangement of columns within the database table.

1 8. The method of claim 5 wherein executing the first function to obtain a collection of
2 data formatted according to the first type of data structure comprises executing the
3 first function to obtain the array of data elements.

1 9. The method of claim 1 wherein the formatting information indicates an
2 arrangement of rows and columns of a database table and wherein organizing the
3 collection of data according to the formatting information comprises tabulating the
4 collection of data according to the arrangement of rows and columns.

1 10. A method of executing a function in a database management system, the method
2 comprising:
3 receiving a request to execute a first function that returns a predetermined data type,
4 the predetermined data type including an array of aggregate data values;
5 executing a second function to obtain formatting information that describes an
6 arrangement of component data values within each of the aggregate data
7 values;
8 executing the first function to obtain the array of aggregate data values; and

9 returning the array of aggregate data values in a data structure that includes the
10 component data values indicated by the formatting information.

1 11. The method of claim 10 wherein executing the first function to obtain the array of
2 aggregate data values comprises executing the first function after executing the
3 second function.

1 12. The method of claim 10 wherein executing the first function to obtain the array of
2 aggregate data values comprises executing the first function before executing the
3 second function.

1 13. The method of claim 10 wherein executing the second function to obtain formatting
2 information that describes the arrangement of component data values comprises
3 executing the second function to obtain a list of attributes that correspond to the
4 component data values, each of the attribute including a name and a data type.

1 14. The method of claim 13 wherein returning the array of aggregate data values in a
2 data structure that includes the component data values indicated by the formatting
3 information comprises returning each of the aggregate data values as a respective
4 set of the component data values.

1 15. The method of claim 14 wherein each of the component data values has the name
2 and data type of the corresponding attribute.

1 16. A system comprising:
2 a processing entity; and
3 a memory coupled to the processing entity and having program code stored therein

4 which, when executed by the processing entity, causes the processing entity
5 to:
6 receive a request to execute a first function included in the program code;
7 execute a second function included in the program code if the first function is
8 defined to return data in a first type of data structure, the second
9 function, when executed, returning formatting information that indicates
10 an arrangement of fields of data within the first type of data structure;
11 execute the first function to obtain a collection of data formatted according to
12 the first type of data structure; and
13 organize the collection of data according to the formatting information
14 returned by the second function.

- 1 17. The system of claim 16 wherein the processing entity comprises a plurality of
2 processors coupled to one another in a network.
- 1 18. The system of claim 17 wherein the memory comprises a plurality of sets of storage
2 devices, each set of storage devices being coupled to at least one of the processors
3 and including at least one non-volatile storage device.
- 1 19. A system comprising:
2 a processing entity; and
3 a memory coupled to the processing entity and having program code stored therein
4 which, when executed by the processing entity, causes the processing entity
5 to:
6 receive a request to execute a first function that returns a predetermined data
7 type, the predetermined data type including an array of aggregate data

8 values;

9 execute a second function to obtain formatting information that describes an

10 arrangement of component data values within each of the aggregate data

11 values;

12 execute the first function to obtain the array of aggregate data values; and

13 return the array of aggregate data values in a data structure that includes the

14 component data values indicated by the formatting information.

1 20. The system of claim 19 wherein the processing entity comprises a plurality of

2 processors coupled to one another in a network.

1 21. The system of claim 20 wherein the memory comprises a plurality of sets of storage

2 devices, each set of storage devices being coupled to at least one of the processors

3 and including at least one non-volatile storage device.

1 22. A computer-readable medium carrying one or more sequences of instructions

2 which, when executed by one or more processors, causes the one or more

3 processors to:

4 receive a request to execute a first function included in the one or more sequences

5 of instructions;

6 execute a second function included in the one or more sequences of instructions if

7 the first function is defined to return data in a first type of data structure, the

8 second function, when executed, returning formatting information that

9 indicates an arrangement of fields of data within the first type of data

10 structure;

11 execute the first function to obtain a collection of data formatted according to the

12 first type of data structure; and
13 organize the collection of data according to the formatting information returned by
14 the second function.

1 23. A computer-readable medium carrying one or more sequences of instructions
2 which, when executed by one or more processors, causes the one or more
3 processors to:
4 receive a request to execute a first function that returns a predetermined data type,
5 the predetermined data type including an array of aggregate data values;
6 execute a second function to obtain formatting information that describes an
7 arrangement of component data values within each of the aggregate data
8 values;
9 execute the first function to obtain the array of aggregate data values; and
10 return the array of aggregate data values in a data structure that includes the
11 component data values indicated by the formatting information.